

this result as the experiment was very small and the young birds were killed before they reached maturity. In the Barb-Fantail-Nun crosses red, yellow, black, and mixed red and black wattles were obtained. The yellows might possibly have changed to red. No flesh-coloured wattles were recorded. The two Nun-Fantails, however, had flesh-coloured wattles. In the Tumbler-Fantail experiment the wattles were flesh-coloured throughout.

Owing to the various changes occurring in this character during the life of an individual, it is by no means a satisfactory subject for experiment.

#### CONCLUSION.

The experiments here recorded have been subsidised by the Government Grant Committee of the Royal Society. The writer is indebted to Mr. J. H. Elwell for much kind assistance.

The matings, throughout, have been made in consultation with Mr. Bateson, who has most kindly supervised the experiments. He has also read the manuscript for the present report, and made many very valuable suggestions and alterations. To him the writer desires to express his sincere thanks.

#### EXPLANATION OF THE PLATES.

##### *Black Barb-White Fantail experiment.*

PLATE IV. Fig. 1. Black with some white feathers.

Fig. 2. White with black patch. (Exp. 5.)

PLATE V. Fig. 1. Reversionary blue.

Fig. 2. Reversionary blue, dark type. (Exp. 5.)

PLATE VI. Fig. 1. Blue with some white feathers.

##### *White Tumbler-White Fantail experiment.*

PLATE VI. Fig. 2. White with few coloured feathers (black).

PLATE VII. Fig. 1. White with few coloured feathers (red).

Fig. 2. Tricolor.

## 2. The Duke of Bedford's Zoological Exploration in Eastern Asia.—IX. List of Mammals from the Mongolian Plateau. By OLDFIELD THOMAS, F.R.S., F.Z.S.

[Received January 21, 1908.]

After making the collection in the Shantung Peninsula referred to in a previous part of the present series, Mr. Malcolm Anderson made a trip to the Mongolian Plateau, reaching a point about 100 miles N.W. of Kalgan, and collected there the series now enumerated.

The fauna of this region, as was pointed out by Père David, is exceedingly poor, and Mr. Anderson was in consequence only able to get nine species, but these are all of interest, and form a valuable nucleus for further work in Northern China. Most of

them are represented by excellent series of the perfectly prepared skins to which Mr. Anderson has now accustomed us, skins of a very different character to any on which work in Eastern Asia has hitherto had to be done.

Mr. Anderson's notes on the trip are as follows:—

“On the 16th July, 1907, I left Kalgan (Jang-kia-kou), in North-western Chih-li Province, for the Mongolian Plateau. Some twelve miles north-west of Kalgan we began the ascent of the escarpment, and about 18 miles from that city found ourselves at the summit of the range of mountains which, in this part, borders the plateau. From here we descended some hundreds of feet to reach the general level of the tableland. We travelled two days over the plateau, till, on the evening of the second, we reached Taboul (Five Hills), at a point 100 miles north-west by north from Kalgan. Here, at an elevation of approximately 5000 feet, the country is of rolling hills with only occasional level stretches. There is not a tree, nor even a bush, in the region, but the hills bear abundant grass, which makes this district the best pastureland in Mongolia. It is, indeed, the district from which the Chinese Government draws its supply of cavalry-horses. Sheep, goats, kine, camels, and horses are raised by the natives, who have no other means of livelihood.

“In general the rainfall is meagre, but it chanced that during my stay, between July 18th and August 13th, there were almost daily rains, which often came in the shape of cloud-bursts, coming up in the south-west and disappearing in the north-east. Heavy dews fall nightly. I was informed that the winters are cold with piercing winds, but the snowfall is not great.”—*M. P. A.*

1. *VULPES* sp.

♂. 1487.

Too young for determination.

“A family of foxes was in the Taboul neighbourhood when I went there, but they were evidently very shy, for on seeing us one day they forsook the place and did not return.”—*M. P. A.*

2. *CITELLUS MONGOLICUS* M.-Edw.

♂. 1475, 1477, 1493, 1499, 1500, 1502, 1516.

♀. 1479, 1483, 1501, 1503, 1504, 1510, 1533.

These specimens are certainly referable to *C. mongolicus*, whether that animal is or is not synonymous with *C. brevicauda* Brandt, as has been asserted.

Mr. Campbell also obtained some examples of the species at Hara-ussu, not far from the present locality.

The Old-World *Citelli* are very unsatisfactorily known, and this plentiful series will be of much assistance in working out the group.

“Very common; diurnal.

“On our trip into Mongolia, both going and returning, I saw great numbers of these animals along the road. Particularly in

one locality, about 70 miles from Kalgan, they have a large colony, and there the burrows are about the sides of mounds overgrown with bush-grass. At Taboul I found them living about the hill-sides, and their burrows not distinguished from those of other mammals."—*M. P. A.*

### 3. MERIONES UNGUICULATUS M.-Edw.

♂. 1473, 1478, 1485, 1486, 1489, 1492, 1495, 1506, 1507, 1514, 1539.

♀. 1464, 1469, 1470, 1471, 1474, 1496, 1505, 1511, 1512.

A female in spirit, with 2—2=8 mammae.

These specimens quite agree with a typical specimen in the Museum from "Chinese Mongolia" received from the Paris Museum. None of them shows any approximation in the character of the claws to an example of *M. psammophilus* M.-Edw., which was collected in the near neighbourhood of Kalgan, but which Mr. Anderson did not chance upon.

"This, the most abundant mammal, was literally almost everywhere throughout this part of Mongolia. They are diurnal to some extent, but may be most frequently seen between sunset and dark, when they sit spermophile-like before their burrows. I frequently succeeded in approaching within about eight feet of a sitting individual, during which manœuvre the animal would eye me steadily and, finally, with one rapid move, plunge into his hole, but reappear after a few moments if I remained perfectly still. These animals make a curious sound beneath the earth; it sounds very much like the distant galloping of a horse on a hard road, and I was much puzzled about it for some days. How the sound is produced I do not know."—*M. P. A.*

### 4. MUS WAGNERI MONGOLIUM, subsp. n.

♂. 1472, 1520. ♀. 1480, 1481, 1484, 1532.

A white-bellied Mouse of the *musculus* group, not so pale as true *wagneri*.

General colour above rather paler than Ridgway's "broccoli-brown," the light rings on the hairs below "écru-drab" and pinkish buff; sides rather paler than back, but not approaching to clear buffy of true *wagneri*. Whole of under surface, hands, and feet pure white, the hairs white to their bases; line of demarcation on sides very sharply defined. Ears like head, their proectote little darker. Tail rather short, inconspicuously bicolor, brown above, dull whitish on sides and below.

Dimensions of the type, measured in the flesh:—

Head and body 82 mm.; tail 50 (range up to 56); hind foot 15.5; ear 12.5.

Skull—greatest length 21.5 mm.; basilar length 17; zygomatic breadth 11.3; nasals 7.9; palatilar length 9.5; palatal foramina 4.7; length of upper molar series 3.3.

*Type.* Old female. B.M. No. 8.3.5.36. Original number 1484. Collected 28th July, 1907.

Accepting Dr. Büchner's identification of the pale Central-Asian White-bellied House-Mouse as *M. wagneri*, I feel compelled to give a racial name to its representative in Eastern Mongolia and China, on account of its much darker colour, which is quite uniform in all the specimens obtained by Mr. Anderson. Of the true *M. wagneri* we have for comparison two specimens from the Prjewalski collections, received from the St. Petersburg Museum.

"Found only about the tents of the Mongol village where I lived. They were very bold, but did not do much damage."—*M. P. A.*

##### 5. *CRICETULUS GRISEUS OBSCURUS* M.-Edw.

♂. 1513, 1522, 1523, 1529, 1530, 1536, 1537, 1545.

♀. 1518, 1519, 1524, 1528, 1538, 1543, 1544.

♀ in spirit.

These specimens, all in summer pelage, differ from the Chefoo series of *griseus*, which are in winter dress, by being slightly darker in tone, as compared with the very grey colour of the latter animals. Whether this difference in colour is solely due to season remains to be seen when further specimens representing other seasons are available for examination.

In addition, the Mongolian specimens seem to have on the average rather larger teeth, but the difference is not quite constant.

Milne-Edwards's *Cricetulus obscurus* was described from Satchy, some 200 miles S.W. of the present locality, and I think Mr. Anderson's specimens may be provisionally referred to it, and that it might be considered as a subspecies of *C. griseus*.

##### 6. *CRICETULUS CAMPBELLI* Thos.\*

♂. 1465, 1466, 1468, 1498, 1525, 1527, 1534, 1535, 1546.

♀. 1467, 1482, 1497, 1526, 1547, 1548.

Although there are certain discrepancies between the measurements of these specimens, as taken in the flesh by Mr. Anderson, and those recorded by me from Mr. Campbell's spirit-specimens, the agreement in all other respects is too exact, and the localities are too close to each other, for there to be any genuine racial difference between the two. Probably variations in the method of measuring the minute tail, and the contracting effect of alcohol on the ears would account for such differences as exist.

The beautifully marked Hamsters of this group have hitherto been exceedingly rare in collections, and the nice series obtained by Mr. Anderson is of much value.

The following are the flesh-measurements of two old examples:—

♂. Head and body 88 mm.; tail 14; hind foot 12; ear 13.

♀. " " 90 " ; " 11; " " 12; " 14.

\* *Ann. Mag. N. H.* (7) xv. p. 322 (1905). The position of the type locality was incorrectly given in this description, owing to a confusion between two similar names. The proper position is about 42° 40' N., 116° 20' E.

"I did not discover much difference in the habits of these two Hamsters, but I believe that the long-tailed form (*C. griseus*) burrows for itself, while the short-tailed one (*C. campbelli*) is more inclined, at least in this region, to take possession of holes of the Red-tailed Rat (*Meriones*). Both species live on the seeds and leaves of small plants, among which they can often be seen running about in the late evening. Both species are abundant."—*M. P. A.*

7. *MICROTUS ANGUSTUS*, sp. n.

♂ (old). 1517. Mongolian plateau. Alt. 5000'. 4th August, 1907. B.M. No. 8.3.5.63. *Type*.

A large pale species of the "*Stenocranius*" group.

Size about as in *M. (Stenocranius) slowzowi* Kastch. General colour pale isabella, resulting from a coarsely lined mixture of dull buffy and brown. Sides clearer buffy; a marked buff patch, probably glandular in nature, just in front of the hips. Hairs of under surface cream-buff terminally, the grey bases to the hairs showing through. Sides of muzzle and tufts at bases of ears rich buffy; the head otherwise like the body. Ears rather short, not projecting above the (summer) fur, the short hairs clothing its edges pale buffy. Hands and feet uniformly dull buffy above; pollex with a small nail. Tail well clothed, dull buffy, with a narrow rather darker line along its upper surface. Skull of the extreme "*Stenocranius*" type, very long and narrow, as shown by the measurements given below. Palatal foramina rather short. Posterior palatal pits deep, the septum between them very narrow. Opening of posterior nares narrow, angular. Bullæ of average size.

Teeth of the usual *arvalis* type,  $m^3$  with four spaces and a posterior crescent.  $M_3$  with six spaces and an anterior trefoil.

Dimensions of the type, measured in the flesh:—

Head and body 112 mm.; tail 32; hind foot 17; ear 10.5.

Skull—greatest length 26.8 mm.; basilar length 24; zygomatic breadth 12.9; nasals  $7 \times 3.1$ ; interorbital breadth 3; posterior breadth 11; palatilar length 13.8; palatal foramina 5.2; length of upper tooth-series (crowns) 5.7.

*Hab.* and *type* as above.

This Vole is an extreme member of the narrow-headed group called *Stenocranius* by Kastchenko, but I fail to identify the species with any hitherto described. Radde's *Arvicola mongolicus* is a dark-coloured species ("dorso fusco"), *Microtus raddei* and *M. gregalis* are smaller, while *M. slowzowi* and *M. tianshanicus*, to which the dimensions most nearly relate it, are from localities so widely distant, with other species intervening, that it cannot possibly be either of them.

"Probably rare. Caught by hand among grass and weeds in the middle of the afternoon. No other specimens could be found, and there were no burrows about."—*M. P. A.*

[*ALLACTAGA MONGOLICA* Radde,

*Dipus jaculus*, var. *mongolica* Radde, Reise S.-O. Sib., Säug. p. 170 (1862).

*Dipus (Jaculus) annulatus* M.-Edw. Rech. Mamm. p. 149 (1868-74).

♀. Hara-Ussu, N.W. of Kalgan. C. W. Campbell.

The specimen obtained by Mr. Campbell at Hara-Ussu nearly resembles a co-type of *A. annulata* received from the Paris Museum, and collected by Père David on the "plateaux sablonneux de Mongolie," no doubt not very far from the present locality. But the animal would seem to be referable to the earlier-published *A. mongolica*, described by Radde from the northern edge of the Mongolian plateau.]

8. *LEPUS TOLAI* Pall.

♂. 1462. ♀. 1463, 1490.

In 1898 two specimens of this same Hare were obtained by Mr. C. W. Campbell at Hara-Ussu. All are in summer pelage, so that it is not easy at present to define their differences from the Chefoo and Peking Hare, *L. swinhoei* Thos., which Mr. Anderson collected in winter and early spring.

"Common in certain localities. The Hare in Mongolia is rather strangely fond of the proximity of the native encampments. The people say that they come near the camps for protection from wolves, and this seems probable, for the Hares have nothing to fear from the people, while the Mongol dogs, though fierce and strong enough to make even a wolf think twice, are probably seldom swift enough to catch a Hare, and, being used merely as watch-dogs, they are kept close to the tents."—*M. P. A.*

9. *OCHOTONA DAURICA* Pall.

*Lepus dauuricus* & *L. ogotona* Pall.

♂. 1488, 1491, 1508, 1515, 1540.

♀. 1476, 1509, 1521, 1531, 1541, 1542.

These specimens agree in all essential characters with the specimen from Urga, N.W. Mongolia, figured by Büchner as representing Pallas's species. With the exception of a faded dealer's skin from "Amurland," they are the first examples of this species that the Museum has received.

There can be no doubt that Pallas's specific names *ogotona* and *dauuricus* both belong to the same animal, as explained by Büchner; and Bonhote's recent differing from the latter\* is due to his having accepted as correct an old determination of the Museum specimen No. 45.4.21.5, which was bought from the dealer Brandt under the name of *Lagomys ogotona*, and said to come from "Asiatic Russia—Kirgisen."

But this specimen, which is certainly not *ogotona* (= *dauurica*), is the type of *Ogotoma pallasii*, a name given by Gray to Water-

\* P. Z. S. 1904, ii. p. 216.

house's *Lagomys ogotoma*, the description of which was based on this specimen, while the skull characters of the genus *Ogotoma*, as given by Gray, were also drawn up from it. And it has been again redescribed by Bonhote as *Ochotona ogotona*, and stated to be nearly related to *O. ladacensis* Günth.

The name *O. pallasi* and the descriptions above quoted will therefore have to be reckoned with by future writers about this difficult group.

"Not common—somewhat diurnal. Frequents the hill-sides where grows a stiff fragrant weed on which it seems to feed. In several old fox-burrows I found great masses of cuttings of this weed, and in that immediate vicinity trapped five of the series. Their burrows are not clean-cut and vary greatly in diameter. Where several of these animals live near together their holes are connected on the surface by a network of little trails. The presence of these animals is generally betrayed by little piles of spherical droppings at the mouth of the burrow, indicating also that the occupants are cleanly in habit."—*M. P. A.*

### 3. Descriptions of new Species of Butterflies of the Division Rhopalocera from Africa and from New Guinea. By G. T. BETHUNE-BAKER, F.L.S., F.Z.S.

[Received January 21, 1908.]

(Plates VIII. & IX.\*)

#### ACREA BENI, sp. n.

♂. Both wings bright orange-red. Primaries with termen and apical half of costa linear, black, with all the terminal parts of the veins outlined finely with black, tapering finer basewards; a black spot in the cell, another at the end of the cell, beyond this three subcostal confluent small spots with a larger one shifted outwards between veins 4 and 5 and a smaller spot below it between 3 and 4, a spot below the end of the cell, two between veins 1 and 2, one near the base and one near the termen. Secondaries with costa narrowly black, with a subterminal scalloped line confluent with the costa along the veins, terminal part of veins slightly marked with black, base irregularly restrictedly black; a series of three subbasal spots, that in the cell shifted slightly outwards, a spot at the upper end of the cell; a curved series of postmedial spots, that near the angle of vein 2 shifted well inwards with one below it shifted well outwards.—*Under side*. Primaries as above, but paler. Secondaries ochreous, with pink internervular stripes; the spots as above, but smaller, and the base broken up into five or six spots instead of being all confluent as above.

♀. Both wings dirty brown, with smaller spots and no basal spot in the fold of the primaries. Secondaries with the black

\* For explanation of the Plates, see p. 126.